4104 Rosemary Street
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Dr. Joshua Lederberg
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Dear Dr. Lederberg:

I have at hand the xeroxed copies of two of your columns referring to yellow fever and also to the Lassa virus fever. In attempting to comment on the one entitled "Yellow Fever Still Survives in Jungles of Africa, Brazil," I found myself practically writing a textbook on yellow fever. I am instead going to point out a few items in which your article is misleading, but shall not go into the yellow fever situation in depth.

The statement that "vaccination and quarantine of exposed travelers have kept the virus out of this country" is not backed up by the facts. An efficient yellow fever vaccine was not available until 1937 or 1938, and for many years now there has been no presentation of suspect cases at quarantine to be excluded. The only breach made in quarantine since the early part of the century was the case you cite in 1924.

You refer to Walter Reed and his fellow volunteers in Cuba. As a matter of historical fact, Walter Reed was not a volunteer and did not participate as one of the experimental subjects in any part of the yellow fever investigations in 1900-1901.

You lump Africa and Brazil together as maintaining yellow fever only because it continues as a harmless disease among monkeys in the two continents. Yellow fever does not kill the monkeys of Africa but is quite fatal to some species of monkeys in the Americas. On the other hand, yellow fever as a human disease does continue in Africa, whereas the campaign of the Rockefeller Foundation for the eradication of yellow fever in the Americas between 1918 and 1934 did, with the cooperation of the infected countries, result in eliminating the continuing endemic human yellow fever transmitted from man to man by the aegypti mosquito. Since 1934 the few small outbreaks of urban yellow fever have served a useful purpose in keeping pressure on the program for the eradication of the aegypti mosquito. They have emphasized the permanent threat of yellow fever to the urban populations with continued infestation of Aedes aegypti.

The statement that the Latin American health authorities mounted an aggressive campaign in 1940 is misleading. The aggressive campaign was based on action taken, first, at the Pan American Sanitary Conference in 1942 and, second, at the Directing Council meeting of the Pan American Health Organization in 1947. The eradication resolutions were introduced in the first instance by the delegate of Bolivia and in the second instance by the delegate of Brazil. I know that on both occasions the American delegate, Dr. Thomas Parran, was consulted beforehand by the delegates of Bolivia and Brazil. In each instance assurance was given that the United States would support the resolution. Thus the obligation for eradication in the Americas was assumed equally by the United States and by the other representatives of the Western Hemisphere.

In 1958 the Pan American Health Organization certified the eradication of aegypti in many of the countries of South America and Central America. Annually since that time the countries of the Americas have ~~yearly~~ voted support for the program of eradication and have urged the delinquent countries to keep their commitments.

In 1961 Mexico forcibly called the attention of the Directing Council of the Pan American Health Organization to the failure of the United States to participate in the eradication program. In 1962 the Mexican Government put the eradication of Aedes aegypti on the agenda for the meeting of the Presidents of Mexico and of the United States in that year. As a result of this pressure, after high level discussions within the administration with representatives of the State Department, of Health, Education, and Welfare, and of the Bureau of the Budget, in 1962 the Surgeon General of the Public Health Service was authorized to commit the United States to the eradication of aegypti in our southern states, in Puerto Rico, and in the Virgin Islands. The Congress of the United States did in 1963 appropriate $3,000,000 for the year's effort. This money became available in October 1963. In 1969, after an expenditure of some $56,000,000, the program was abandoned completely with nothing to show for the effort.

I am particularly concerned with the statement that the "aim of total eradication of the mosquito was undoubtedly too ambitious." In dealing with the Aedes aegypti mosquito, one cannot afford not to eradicate. The continuing cost of local control efforts within a short time cost much more than a proper eradication effort. In this matter I can speak as one having had considerable experience with this mosquito.

At long last I am coming to a point on which we thoroughly agree, namely, "it relied too heavily on rote uses of pesticides like DDT." The routine application of pesticides can be quite effective in the gross reduction of a given insect population. But the careful searching out and destruction of individual containers breeding aegypti is essential in an eradication effort: 90% efficiency--even 99% efficiency--is gross failure in an eradication effort.

Your disagreement with the Senator who indicated that not a single case of yellow fever has been reported in the last forty years is, of course, quite proper. Your citation of the Senegal outbreak of 1965 might have been further supported by an even more extensive outbreak of yellow fever in the fall of 1969 in several countries: Upper Volta, Ghana, Dahomey, Nigeria, Togo, Niger, and possibly others in the area just south of the Sahara.

I realize fully that I am, with regard to yellow fever, not in a position to set the standards for newspaper columns on the subject. I am, however, very much interested in keeping the yellow fever and dengue situation before the public, because of the things I have seen yellow fever do since I first went to South America in 1920.

It may interest you to know that many of the Latin American workers cannot understand how the United States could have spent so much money without appreciable results. The demonstration of the eradicability of Aedes aegypti was made in Brazil in 1932-1933. All of the countries of South America

excepting Venezuela, the Netherlands Guiana, and a small area of Colombia were successful in eradicating Aedes aegypti, as were also Panama, the five Central American republics, and Mexico. The Mexicans cannot understand why, if they were able to eradicate aegypti on their side of the frontier between their country and ours, it is impossible to eradicate it on this side of the border. Up to October 1969, Mexico had been reinfested nine times. Maintaining a vigilant service and cleaning up each reinfestation as it comes represent : continual expenditure which would be unnecessary were the United States to clean up aegypti on this side of the line.

The United States, at the 1969 meeting of the Directing Council of the Pan American Health Organization, proposed an in-depth cost benefit analysis of the prevention of Aedes aegypti-transmitted diseases, yellow fever, dengue, and the hemorrhagic fever of Asia. It has been intimated that the United States would voluntarily contribute to the expense of such a study. There was a recent meeting of the preliminary working party assigned to establish the parameter for such a study. The report of this working group has not yet been released, but I understand that considerable weight is being given to the need for the prevention of dengue, which caused heavy outbreaks in the Caribbean and northern parts of South America in 1963 and 1964 and again in 1969, without, however, there being any observed hemorrhagic cases such as have been associated with outbreaks of dengue in the Western Pacific and Asia since 1956.

Several islands and countries of the Caribbean are showing renewed interest in eradicating aegypti because of the impact of dengue on their tourist trade.

Of one thing we can be sure, and that is that we have not heard the last of Aedes aegypti, yellow fever, and dengue. I would point out that only a very small percentage of the cases of jungle yellow fever which occur are ever reported. Yellow fever is unique among the epidemic diseases, in that practically no cases are listed unless either pathological or serological confirmation of the case is at hand. As you must know, the jungle type of yellow fever occurs often at great distances from centers of population, so that a very small percentage of the actual cases ever get reported. Even so, since the commitment to eradication on the resolution of Brazil in 1947, yellow fever has occurred on the island of Trinidad and in all of the countries of the mainland of the Americas excepting Canada and the United States in North America, El Salvador in Central America, and Chile and Uruguay in South America.

In closing, I would point out that I have retired some years ago from the Pan American Health Organization and can be reached best at my home address.

Sincerely yours,

Fred L. Soper